REFERENCE CONDITIONS

SOIL

Data Sources

- Snake River Basin Erosion Report (SRBER, 1979)
- Soil Survey of the Caribou National Forest, Idaho (USDA-FS, 1990)
- A View To A River (Leopold, 1994)
- Recollections of Fall Creek (Brunson, 2001)
- Preliminary Landslide Study Eastern Caribou Forest (Olson, et al., 1970)
- Geologic Map of the Driggs Quadrangle, Idaho (IDL, 1979)
- Pritchard/Garden Creek Prescribed Fire Review (Hamann, 1999/2000)

Erosion

At least two, and possibly as many as seven, erosion surfaces have been recognized in the mountains of southeastern Idaho. Since the formation of these erosion surfaces in early to middle Tertiary, continued faulting has uplifted the mountain ranges to their present elevations. Weathering, stream erosion, mass wasting, and glaciation during the Pleistocene all had a role in shaping the uplands of the Fall Creek Watershed. Basins are filled to some extent with alluvial material eroded from the surrounding mountain ranges (USDA-FS, 1990). Much of the geology of the area, such as the Wayan Formation, has high natural erosion rates and mass instability. John C. Fremont first evaluated the soils in the region in 1843. He reports that the soils near Fort Hall contained 68% silica, 7% alunina, 8% carbonate of lime, 5% carbonate of magnesia, 1% oxide of iron, 5% organic and vegetable matter, and 4% water and loss.

Variations in climatic conditions have also contributed to changes in the landscape and geomorphology of the watershed over time. Historically, between 1880 and 1920, the western United States experienced more arid conditions with many heavy, erosive thunderstorms, and fewer, light, soaking showers. During the past few decades however, the climate in the west had changed, on average, to a cooler year-round climate with more precipitation. It is suggested that the west is trending again toward a more arid climate in the coming decades with more intensive thunderstorms occurring (Leopold, 1994).

Land use plays a significant role in past erosion processes. A study completed for the Upper Snake River Basin identified the amounts of erosion from lands based on the type of use occurring on them. For Bonneville County, dry cropland produced by far the greatest amount of erosion of all land uses (SRBER, 1979). Forest and rangeland, on the other hand, produce the least amount of erosion on a large scale because of protective cover. The report identified intensive thunderstorms as the primary cause of severe erosion on unprotected soils. Table A below shows the results of the erosion study for Bonneville County.

Table 7: Erosion rate by land use type in Bonneville County, Idaho.

Land Use	Total Acres (Thousands of acres)	Less than 0.1 t/ac/yr (M acres)	0.1 – 0.5 t/ac/yr (M acres)	0.5 – 1.0 t/ac/yr M acres)	1.0 – 5.0 t/ac/yr (M acres)	5.0 – 10.0 t/ac/yr (M acres)	>10.0 t/ac/yr (M acres)
Irrigated Surface	**82.0**				**61.6**	**1.4**	**19.0**
Irrigated Sprinkler	**96.6**	**1.1**	**0.8**		**83.6**	**7.5**	**3.6**
Dry Cropland	**196.0**				**16.6**	**43.4**	**136.0**
Rangeland	**385.6**	**97.0**	**288.6**				
Forest	**349.8**	**34.4**	**315.4**				
Urban	**22.0**	**22.0**					
Other	**42.8**	**8.6**	**34.2**				
Total	**1,174.8**	**163.1**	**639.0**	**0.0**	**161.8**	**52.3**	**158.6**

(USDA, 1979)

Before the settlement of European man in the late 1800s' to early 1900's, few roads and trails existed in the watershed. Since that time, many trails and roads have been pioneered or constructed near riparian areas and an on the uplands that may have had an effect watershed condition. Because roads have the greatest potential to create erosion and sediment, often the watershed condition can be directly related to the density of roads and trails, their location and maintenance in the watershed. Other disturbances (i.e. logging, grazing, mining and recreation) also play an important role in watershed condition. Areas of the Fall Creek Watershed have declining watershed condition where these kinds of disturbances have remove natural vegetation and caused accelerated erosion.

Wildfires occurred in the past usually during regular return intervals with similar results that occur in the present. Wildfires that remove protective cover from the soil surface have contributed to erosion on forest and rangelands in the past. Both wildfires and prescribed fires have occurred within the watershed in the recent past. In 1999, the Garden Creek prescribed fire burned approximately 2,600 acres and caused some areas of severely burned soil conditions at the head of Garden Creek. Monitoring information on this prescribed fire indicates that 20% of the burned area was burned with high intensity and the remainder was either burned with moderate or low intensity, or unburned (Hamann 1999/2000). The Fall Creek Basin wildfire burned several hundred acres of brush and grass. This fire caused no significant runoff or erosion. Two other wildfires occurred in 1966 called the Current Creek wildfire and the Garden Creek wildfire. These fires also did not cause any excess erosion or runoff (Brunson, 2001). Wind was also identified as an agent of past erosion in the County.

Localized intense thunderstorms that often occur in the area sometimes cause severe soil erosion, especially on geologic formations that are unprotected. Large bands of gray colored outcroppings of silty clay or clay beds can be seen on many of the mountain ranges especially along Fourth of July Ridge and Dead Horse Ridge (IDL, 1979) (see Figure 2).

The outcroppings of mudstone and siltstone from the Wayan Formation have eroded naturally over a long period of time. This erosion (background erosion) combined with erosion from man-caused disturbances is the cumulative erosion regime for the Fall Creek watershed.

Ground Cover/Riparian Soils

Ground cover within the watershed is assumed to have been adequate to protect the soils from erosion before livestock were introduced into the area. This assumption is made based on the amount of biomass currently consumed by livestock that would be historically left as ground litter. Riparian areas and wetlands also had less impact from trampling and grazing before the introduction of livestock. Once livestock were introduced, historic intensive grazing occurred mostly by sheep. Livestock driveways, such as the Bear Creek Driveway, and bed grounds caused excessive erosion on many upland areas of the watershed. Historically, no lands were farmed within the watershed.

Mass Stability

Although much of the watershed has unstable geologic formations (IDL, 1979), few recent landslides are evident. Most of the past mass movements have occurred in the form of rapid debris slides or even debris avalanches. Flatirons, a triangle shaped landform, are also noticeable in some locations (Olsen et al., 1969).

WATER

WATERSHED CONDITIONS

In its simplest form, a watershed's condition can be viewed as the status of its components as a result of natural and anthropogenic disturbances. To get a clear understanding of a watershed's condition, both the spatial and temporal variability must be considered. Five sub-watersheds were identified to address the spatial variability: Lower Fall, Upper Fall, South Fall, Prichard, and Garden. The temporal variability was addressed by evaluating both historic and current conditions. This section deals with historic conditions.

Inland West Watershed Initiative Ratings (IWWI)

The IWWI was developed to evaluate all federally managed subwatersheds in the Great Basin and Rocky Mountain areas using common criteria. This analysis focused on three IWWI factors:

- Watershed vulnerability evaluates the inherent risk of instability based upon the presence of sensitive lands. Sensitive lands are defined as having highly-dissected slopes, highly erosive soils, landslide deposits, or landslide prone areas.
- Geomorphic integrity evaluates the function of the sub-watersheds, streams, and riparian areas within the basin.
- Water quality integrity evaluates whether water-related resource values (beneficial uses) are being protected.

Historic Conditions

Since watershed vulnerability reflects the inherent risk of instability, the historic and current conditions would be the same. Therefore the watershed vulnerability of all five basins would have been high. The "Geomorphic Integrity" and "Water Quality" of all basins would have been high. This means that most stream segments were properly functioning with only short-term or minor impairments. These ratings would have produced a high composite rating with no damaged segments.

Watershed Conditions Resulting from Disturbance

Historic Conditions

Fire, floods, and avalanches are the primary natural disturbances in the Fall Creek watershed. These events, individually or together, have produced large sediment and water yield increases that have effected channel conditions. The effects of these historical disturbances are discussed in the following section on stream conditions.

RIPARIAN CONDITIONS

Riparian areas would have been in properly functioning condition meaning that they provided: (1) shade to regulate water temperatures, (2) strength to stream banks (3) large woody debris, (4) fine organic material and invertebrates as a food source, (5) sediment and water filtration, and (6) cover for fish. Two key elements to consider are "floodplain and wetland conditions" and "riparian vegetation conditions."

Flood Plain and Wetland Historic Conditions

Fall Creek and its principle tributaries were un-confined streams flowing through moderately wide to narrow valley bottoms. In general, approximately half of the valley bottom's width would be subject to frequent over-bank flows (every one-two years). This area is considered the historic floodplain. Fall Creek also supported narrow palustrine wetlands (dominated by trees, shrubs, persistent emergents, emergent mosses, or lichens). These wetlands were generally included in the stream's riparian area. The structure and function of these wetlands were maintained by high water tables and periodic flooding. Garden and Pritchard creeks also had wetlands just above the confluence with the South Fork (palustrine). These wetlands maintained high water quality and high base flows.

Riparian Vegetation Historic Conditions

The dominant riparian type for this watershed would have been willow/carex. This vegetation would have filled the floodplain producing a moderately wide moist area surrounded by dry hillslopes. Very little bare ground would have been present with this cover type. These species would have provided a dense root mat capable of maintaining bank stability between 70-90%. The only areas of instability would have been where the stream flowed against the toe of adjacent slopes. In these areas the riparian zone would have been narrow, with less wetland species.

STREAM CONDITIONS

Now that the drainage basin, climate, watershed conditions, and riparian conditions have been evaluated we can move on to stream condition/function. In all stream systems there exist unique balances between many interrelated variables including: stream flow, sediment quantity and size, geomorphic controls, bank vegetation, and floodplain accessibility. A major shift in any of these variables may initiate a series of adjustments leading to a new channel form. This section begins with an assessment of the stream flow and sediment regimes and ends with a discussion of stream conditions.

Streams: Overall Historic

Fire, floods, and avalanches were the primary natural disturbances in the Fall Creek watershed. These events, individually or together, produced large sediment and water yield increases that affected channel conditions. Following a disturbance, material accumulated in both headwater streams and localized areas of the primary channels. This material was then routed downstream delivering nutrients, sediment, and structure. While this pulse created a short-term impairment, it was important in maintaining the long term physical and biological functioning of the system. Following the disturbance was a period of recovery during which time the channel stabilized and provided morphological features that provided habitat for a variety of aquatic species. This recovery period continued until the next disturbance "reloaded" or "reset" the system.

Stream Flow Regime

The stream flow regime refers to the quantity and timing of runoff. Both of these variables are critical factors in determining the health of aquatic systems. Climate, watershed condition, and riparian condition all influence the streams runoff patterns.

Flow: Historic Conditions

Flows in Fall Creek peaked three weeks earlier than the South Fork. This likely resulted from less lag time (the time between a precipitation event or the onset of snow melt and the peak flow) in the smaller basin. Even so, it is highly unlikely that Fall Creek affected flows in the South Fork. A comparison of flow data shows that when Fall Creek peaked (in mid-may) it made up approximately 1.3% of the total flows in the South Fork. This finding is very close to an area comparison whereby Fall Creek makes up 1.4% of the total area of the South Fork at their confluence.

The peak runoff period typically lasted for three weeks. This is defined as the time when flows wee within 75% of the peak flow (225-300 cfs). This is typical of a snowmelt hydrograph where relatively high flows persist throughout the melt period. Stream flows reached their lowest levels in September (although August through October were all close to base flow). While springs played a role in water production, they were not primary drivers. This is shown by the fact that the annual peak ranged from 15-30 times the base flows.

Sediment Regime

The sediment regime refers to the size, quantity and timing of soil and rock movement through the watershed. All three of these variables are critical factors in determining the health of aquatic systems. Climate, drainage basin characteristics, watershed condition, and riparian condition all influence the streams sediment regime.

Sediment: Historic Conditions

Most sediment would have entered the stream system through episodic mass wasting events or chronic bank erosion. The mass wasting would have been infrequent events triggered by extreme weather. While less common than bank erosion, these pulses were much larger. Mass wasting also input large rocks and large woody debris, which were important in creating complex aquatic habitat. The bank erosion would have been associated with natural channel migration as the streams moved across their valley bottoms. This erosion would have been most severe as the streams approached the edge of their valley bottoms or eroded into terraces. This is especially true along South Fall Creek and Fall Creek above June Creek. Sediment from surface erosion would have been uncommon, occurring only after natural disturbances such as fire. However, the well vegetated and relatively flat valley bottoms would have minimized sediment delivery. A final and relatively minor sediment source would have been associated with wildlife impacts to stream banks and game trails.

Sediment Transport: Historic Conditions

During storms and catastrophic events, it's believed that sediment moved through the system in pulses as opposed to a continuous even flow. Most first order (unbranched) tributaries had moderate to steep gradients and were primarily source and transport reaches (A stream types). These streams were characterized by a high rate of sediment delivery to lower gradient streams. Within these A stream types, moderate duration woody debris storage was the primary storage component.

Fall Creek began as a B stream type and transitioned into a C. In the B stream type most sediment storage would have occurred in moderate duration debris storage and short-term bed storage. In the C channel types, fine sediments would have been delivered out onto the floodplain while coarser material would be stored as bed features. This provided a natural sorting of particle sizes with silts and clays enriching riparian areas (trapped by riparian vegetation) and sand appearing as dunes. Extensive beaver complexes, which were common in these low gradient areas, also stored large quantities of sediment. This sediment would either go into long-term storage where ponds filled and a new channel was formed; or moderate duration storage if the dam failed and sediment was released in a large pulse. In general, storage was an extremely important factor in regulating sediment movement through the system and into Fall Creek and the South Fork of the Snake River.

Stream Channel Morphology/Stability

Historically streams in this watershed would have been in a state of "dynamic equilibrium." This means that the channel would be in balance - not aggrading or degrading. Following the geomorphic theory that channels form to accommodate the watershed products (water, sediment, and woody debris) that they normally process, a stable stream would not show more than isolated channel erosion. Stream types (based

on geomorphic characteristics) play a large role in determining stability as the inherent stability of the different types varies considerably. This section merges the stream flow and sediment regimes with the riparian vegetation, and geomorphic controls to evaluate the stream channel itself.

Stream Channel: Historical Conditions

Determining historical conditions was accomplished by evaluating the drainage basin's characteristics, and the forces acting upon them, and then reconstructing the historic stream system. The valley bottoms within this watershed would have supported "C" stream types with "B" inclusions (Rosgen 1994). These channels were low gradient, meandering, riffle-pool streams with cobble to gravel substrates. They also had well-defined bed features such as point-bars. Adjacent to these reaches were alluvial floodplains and terraces. These reaches were highly dependant upon riparian vegetation for their stability. This vegetation also supported large beaver populations that maintained bank moisture and healthy riparian communities. Based upon this analysis the average stream(s) would be similar to the following description:

- Floodplains were moist areas that filled the valley bottoms with deep-rooted vegetation. This slowed the rate of channel migration and bank erosion.
- Streams were connected to their floodplains. As such the energy of peak flows was dissipated on the floodplain and channel impacts were minimized.
- Banks were well vegetated and stable. Based upon an interpretation of the valley bottoms and stream types in the analysis area, the likely natural bank stability values are:

  Fall Creek below June Creek = 90%
  Fall Creek above June Creek = 80%
  South Fall Creek = 70%
- Sediment was primarily from in-stream sources.
- Beavers played an active role throughout the watershed. These complexes served as grade control structures keeping the channels relatively stable. These features also slowed water velocities, stored sediment, and added to stream structure. Good riparian and lower slope conditions supported a large enough population to maintain the facilities and prevent stream impacts when older dams failed.
- The substrate was dominated by cobble and large gravel. Silts dominated in beaver ponds and where the channel was cutting through old ponds.
- Stream connectivity allowed the passage of fish, sediment, and woody debris.

WATER QUALITY

Water Quality refers to the ability of a water body to support its beneficial uses. This can relate to changes in the physical channel or the water column. For this report, changes to the physical channel were discussed under "STREAM CONDITIONS" while water column impacts are emphasized here.

Water Quality: Historic Conditions

Water quality was likely excellent and capable of fully supporting all beneficial uses. The only sources of pollution would have been native wildlife and nutrient releases following large wildfires. Functioning riparian areas would have provided ample vegetation to filter animal waste and sediment. Water temperatures were fairly cool due to the mature vegetation in the riparian areas, late snow melt in the north aspect watershed, and the high elevation of the basin.

FIRE

Historically fire was part of the ecosystem on the Targhee/Caribou National forest. Reports as early as the 1800's indicate fire occurred throughout the area. W.P. Hunt reported on September 9, 1811 in his diary, the valleys had recently been burned by grass fire. (Webster, R.L., Caribou History). This was the first record of fire on the Caribou when he mentioned that a recent fire in the country between the fish Creek divide and present Alexander Gap had destroyed all the horse feed.

The pioneer settlers report that forest fires during the 1870's and as late as 1888, burned uncontrolled all summer long in the Caribou Forest. (Webster, R.L., Caribou History)

The Caribou Forest, especially the original forest unit, is one of the largest burned areas in the intermountain area. The even-aged lodgepole pine stands show that they were seedlings from 1855 to 1890.

Past history indicates that the Indian tribes set whole drainages on fire to improve grazing and wildlife habitats. The past history points to severe fires during the past 100 years that almost completely destroyed the most of the old fir stands.

Treatment of sagebrush and mountain brush has been occurring in the Fall Creek analysis area since 1945. Prior to human suppression of wildfire the area had burned several times within the past 200 years judging by the old fire scares. Some of the sagebrush treatments have included mechanical, chemical and fire methods of brush removal. The cycle required for treatment of sagebrush to maintain desired canopy of 25% to 30% seems to be approximately 20 years. There are several locations in throughout the analysis are where sagebrush canopy has reached that density.

Prescribed fire has been use within the Fall Creek analysis area on a limited bases over the last 50 years. Just recently (last 20 years) the forest service has introduced prescribed fire back into the ecosystem. Fire was imitated in the Garden and Pritchard Creek drainages in 1999. Approximately 2624 acres were treated with prescribed fire. Species burned were conifer timber, aspen and mountain brush communities. At this time mountain brush, aspen, willow, as well as grass and forb species are on the rebound.

Fire records also indicate that the forest service has suppressed wildfire in the analysis area. Very seldom has fire size reached larger than 500 acres with most naturally occurring fires be limited to 1 acre or less in size.

FORESTS

Comparison of 1960 aerial photos with current (1995) aerial photos indicates that the distribution of early serial species such as aspen was more extensive 35 to 40 years ago.

RANGELANDS

Grazing by ungulates in the analysis area has been documented as early as 1824 by fur trappers. Osborne Russel documented large numbers of Bison grazing in Muddy Creek drainage, which is now presently referred to as Fall creek.

Grazing by domestic animals (cattle, horses, sheep and goats) probably first occurred in the late 1800s. This was prior to the creation of the Forest Service. The first documentation of permitted livestock grazing begins in 1928. Early documents address the Fall Creek Basin area (presently the Fall Creek Cattle Allotment). Early accounts of the management of this are as follows:

In 1920 1725 cattle and 100 head of semi wild horses (however documents indicate there were many more horses than 100 head on the allotment) in addition to several thousand sheep were permitted to graze on now what is included in the Fall Creek Cattle Allotment. Early documentation also indicates there was considerable trespass from livestock not only horse but also cattle and sheep off private lands adjacent to the National Forest.

Permitted on dates at that time was April 20 to October 20. Many of the horses were left to winter in the area, spending part of the winter months on the allotment and the remainder on private land west of Skyline Ridge.

Common use by cattle and sheep was the norm in the early days. Cattle and sheep preferred different forage species, so early range managers thought the common use practice made good use of the available forage.

In 1928 cattle numbers were reduced to 1000 head with a permitted on date from May 20 to October 31. The 100 head horse permit was abolished in 1929, this help eliminate the trespass which was in addition to the permitted horses.

The permitted cattle number continued to dwindle over the years to 722 head. In 1941 the use period was reduced to June 1 to October 31. The first formal grazing association was formed in 1944.

Present day livestock numbers and dates for the Fall Creek Basin Allotment is; 784 head of cow/calves, with a use period from June 6th to October 10th. There is presently no common permitted use of sheep and cattle. On occasion animals do stray outside the allotment boundaries, but not to significant degree.

Documentation indicates that the Fall Creek Basin area was vastly overgrazed in the early 1900s. In a document written in 1942 a statement reads, “Past heavy overgrazing has severely damaged range on this allotment. Forage is reportedly less than it once was. Accelerated erosion is in evidence on most of the south slopes, and does not appear to be improving”.

At one time in Fall Creek Basin there was about 2000 acres of land filed on under the homestead act. These acres were patented and deemed as agriculture land. By 1955 only 596 patented acres remained in the basin.

The Snake River Cattle Allotment is the other fairly large cattle allotment in the analysis area. Documentation of early management, are similar to the Fall Creek Basin Allotment. Common use form cattle and sheep were occurring. Trespass livestock from adjacent private land was a problem.

Heavy use of the creek and canyon bottoms was acceptable and in fact encouraged in order to get cattle to graze vegetation on the higher slopes.

While documentation indicates the Fall Creek drainage was grazed heavily it also indicates that the Garden and Pritchard Creek drainages were grazed lightly. Heaviest use occurring around the private land at the mouth of the canyons.

Vegetation treatment, mainly sagebrush removal by modern man began in 1945. Information is not clear what type of method was used but statements indicate it may have been by railing (a long piece of railroad rail pulled horizontally behind a team of horses or possible a tractor). This pulled up and broke off the sagebrush. Since that time chemical spraying and burning methods have been used to reduce the amount of sagebrush in the area. History indicates that approximately every 20 years sagebrush should be treated in order to maintain bio diversity in the sagebrush communities.

Early monitoring documents indicated that the stream and canyon bottoms were the main areas where heavy grazing of the early 1900s had made a dramatic impact. The mountain slopes and benches were used to a lighter degree.

The main Fall Creek drainage with modern day grazing practices has recovered from its days of heavy grazing. There are still areas where a combination of livestock grazing and recreation (camping/OHV) use is negatively impacting vegetation (mainly in riparian areas). Wide spread use of Off Road Vehicles (motorcycles and ATVs) are also impacting vegetation and soils on the steep slopes of the canyon. These impacted areas should be identified and management practices instilled to address the problem.

In Fall Creek the vegetative composition seems to have somewhat returned to what it was in the 1800s prior to the heavy grazing of the early 1900s, with the exception of quaking aspen adjacent to the streams. Beaver have reduced the aspen in these areas and between the beaver and the cattle the young aspen suckers do not live to reach maturity.

The first accounts of the Fall Creek area by early fur trappers indicate the drainage was loaded with beaver along the willow lined streams. With quaking aspen and sagebrush covering the surrounding slopes. The south slopes of lower Fall Creek is a major winter range for elk and deer. These slopes are covered with grass species with some brush species growing in the more moist draws. Mountain mahogany, serviceberry, bitterbrush and Rocky Mountain juniper are present. It appears the browse species may be impacted

by the big game use. The majority of the winter range slopes are not grazed by livestock, due to the steepness of the slope.

FISHERIES

The first documented reference to Fall Creek was in the journals of Nathaniel Wyeth on July 26, 1832. He wrote "We crossed Lewis River (South Fork Snake River) in a bull boat without accident and moved west 4 miles where we struck into a deep ravine with a little water in it. This ravine is bordered by high precipices on each side and is small. Three miles up this we encamped for the night. This stream is called "Muddy". As there are several of this name, it is requisite to distinguish this by the cognomen of 'Muddy that falls in Lewis'." Historians believe muddy creek was Fall Creek, tributary to the South Fork Snake River (Webster unknown).

The current name Fall Creek comes from the 60-feet waterfall at its confluence with the South Fork Snake River. The falls is an upstream migration barrier to fish, genetically isolating the Fall Creek fish population from fish in the river. The falls, developed from travertine deposits, was formed after cutthroat trout from the South Fork set up populations in Fall Creek.

Fall Creek has a Rosgen channel type of C with a V-shaped valley and low to moderate sinuosity. The upper reaches are spring fed and have gradients to 16%, decreasing to 2-3%. Beaver activity was relatively common in Fall Creek.

Major Fall Creek tributaries include, South Fork Fall Creek, Monument Creek, Gibson Creek, and Trail Creek. South Fork Fall Creek is a Rosgen Channel Type C with a V-shaped valley and a 4% gradient. The middle section of this stream flows through a meadow setting. The substrate is dominated by fine gravels and sand that is cemented together in some areas forming a conglomerate. There is some beaver activity in this stream. Monument Creek is a Rosgen B type stream with a trough like valley and a 5% gradient. Gibson Creek is a Rosgen type A with a U-shaped valley and a 7% gradient. Trail Creek is a Rosgen B type that has a trough like valley and a 3% gradient. It has a beaver complex throughout.

In 1961, the district implemented a range enhancement project in Fall Creek Watershed. Sagebrush was sprayed with 2, 4-D to encourage grass growth. Fences were constructed to begin rest rotation management. There is no indication the spray slopped over into the riparian area, affecting willows.

Both sides of the lower Fall Creek canyon burned in mid-August 1966, during the Currant Creek Fire. There were 775 acres of brush and timber consumed. Even though the burnt area was seeded by aerial seed dispersal after the fire, the stream received significant run-off and siltation. The fire crossed the stream in places, reducing willow and shrub communities and accelerating bank erosion (Brunson 2001).

Vaughn Haderlie (2001) was employed as the range rider in the Fall Creek watershed in the 1970's. He is also an outfitter in that drainage. He believes the fishing in Fall Creek was great in the mid 1970's through the early 1980's. He frequently caught Yellowstone cutthroat trout in beaver ponds along the stream. He occasionally caught rainbow trout

(planted in the stream annually during that time period). In the 1980's he felt the fisheries declined. Rod Payne (personal communication 2001), a private land owner in Fall Creek watershed and a permitee there, attributes the decline in the Fall Creek fisheries to the decrease in beaver ponds from flooding in 1984 in addition to an increase in human accessibility to the drainage. Payne believes there were many more beavers in Fall Creek in the 1940's than today and attributes this to an increase in trapping.

Figure 10: Beaver dam on Fall Creek, 1991.

Fall Creek has been impacted by a long history of fish stocking. The Idaho Department of Fish & Game fish stocking database, that has entries as early as 1915, indicates past stocking of Yellowstone cutthroat trout, rainbow trout, and brook trout in Fall Creek. The following table documents all known stocking of Fall Creek (IDFG 2001).

Table 8: Known Fish Stocking of Fall Creek.

Year	Species	Number	Size	Comments
1928	CT			From Ashton Hatchery and planted by Bonneville County Sportsman Association (BCSA).
1929	CT			“
1939	RB	16,200		From Idaho Falls rearing ponds and planted by BCSA.
1948	CT	12,000	2-3”	From Ashton in August
1948	RB	2,600	6”	From Ashton in June
1949	RB	360	6-8”	From Ashton in June
1949	CT	6,800	1.5-2”	From Ashton in August
1950-63	RB, CT			
1964	BT	2,156		First plant of BT in Fall Creek
1965	RB, CT		2-4”	
1966	RB			2 plants of rainbow this year
1966	CT			1 plant of cutthroat this year
1966	BT	12,100	2-4”	Second plant of brook trout in Fall Creek
1967	RB			3 separate plants of rainbow trout this year.
1968	RB	2,415	6”	Planted in June.
1969	RB	1,785	6”	Planted in July.
1969	RB	3,850	6”	Planted in August.
1970	RB	3,080	6”	Planted in June.
1970	RB	2,250	6”	Planted in July.
1971	RB	3,360	6”	Planted in July.
1973	RB	3,500	6”	Planted in June.
1974	RB	2,640	6”	Planted in July.
1975	RB	3,150	6”	Planted in August.
1976	RB	1,628	6”	Planted in June.
1978	RB	1,140	6”	Planted in August.
1978	RB	2,000	3-6”	Planted in August.
1979	RB	2,550	6”	Planted in June.
1980	RB	1,950	6”	Planted in June.
1981	RB	980	6”	Planted in May.
1981	RB	1,155	6”	Planted in June.
1982	RB	800	6”	Planted in May.
1982	RB	1,600	6”	Planted in June.
1983	RB	2,475	3-6”	Planted in May.
1984	RB	2,070	6”	Planted in July.
1985	RB	2,010	6”	Planted in July.
1987	RB	1,020	6”	Planted in June. Arlee Rainbow.

The stocking of cutthroat trout upon the native cutthroat trout population in Fall Creek was limited to 7 plants between 1928 and 1966. It is likely this had minimal, if any effect

upon the genetic integrity of the Fall Creek cutthroat trout population. Yellowstone cutthroat trout were used in all 7 plants. Fall Creek has been stocked by Idaho Department of Fish & Game with catchable hatchery rainbow trout nearly every year between 1968 and 1987. These fish were typically planted near roads and apparently did not establish a naturally reproducing population (Idaho Department of Fish & Game 2001). Although genetic samples were collected from Fall Creek cutthroat trout in 1999, they have not been analyzed by IDFG yet, so the degree they have introgressed with rainbow trout is currently unknown. Brook trout, a non-native species, were planted in Fall Creek in 1964 and 1966. These 2 plantings were enough to establish a naturally reproducing population that now dominates the salmonid community in Fall Creek.

In 1982, approximately 25 boy scouts descended upon Fall Creek to plant willows and build fences. In June 1984, District Ranger Norman Huntsman requested Jim Smith, the Forest Fisheries Biologist, to determine the effectiveness of the planting (Huntsman 1984). No effectiveness monitoring report was found in the files. It is assumed Smith moved to another location prior to getting to the monitoring report.

Figure 11: Boy Scouts planting willows along Fall Creek, 1982.

Figure 12: Boy Scouts building fence along Fall Creek, 1982.

Fall Creek was surveyed by Moore (1980) and Moore and Schill (1984) and they documented stocked rainbow trout and cutthroat trout in the stream. Elle and Corsi (1994) also documented dace, sculpins, and shiners in Fall Creek.

The Targhee National Forest (USDA Forest Service 1980) performed a GAWS stream survey on segments of Fall Creek. From the mineral springs to Gibson Creek, there was a high amount of bank cutting in areas due to high flows, low bank rock content, and soil movement into the stream. They documented thick willow growth that helped to stabilize some banks. Beaver activity had caused multiple channels and large, silted pools. They did not observe any spawning areas not affected by silt. Overhanging banks were common.

From the mouth of Gibson Creek to the mouth of the East Fork of Fall Creek, there was extensive bank cutting, with many raw banks 1 to 3 meters high. Much of the bank cutting was caused by slumps, but cattle grazing had increased the cutting, especially where woody vegetation was absent from the banks. Pool development was poor. Cattle trampling had caved in many over-hanging banks (USDA Forest Service 1980).

Upstream of the mouth of the East Fork, the stream was nearly a continuous chain of beaver ponds and eventually transitioned into a steep and small channel. There were many channel changes due to the beaver activity. There were numerous trees that had fallen in the steep upper channel, causing some bank instability while deflecting stream flows. There was good bank vegetation. The side slopes were slumpy, but there were few slumps or slides that had entered the stream. There were some impacts to riparian vegetation by sheep, but they were not reported to be serious (USDA Forest Service 1980).

The South Fork Fall Creek was also surveyed in 1980 by USDA Forest Service using the GAWS habitat survey methodology. In the lower reach of stream, there were extensive deposits of fine sediment. Some of the pools had 18-24 inches of sediment. The stream bottom in faster water was primarily gravel, coated with sand and silt. Sand and silt have been deposited on the lower stream banks in many areas. The bank vegetation was composed of dense willow and sedge. Pool quality was determined to be good, due to undercut banks and overhanging vegetation. The stream channel stability was rated as fair.

The middle reach of the South Fork of Fall Creek was cutting into numerous slumps and slides. The gradient had increased, so sediment produced was transported downstream. The substrate had little sediment and there was good pool quality. The stream channel stability was rated as fair (USDA Forest Service 1980).

The upper reach of the South Fork of Fall Creek had a steep gradient and had stream bank cutting. There was a high frequency of instream wood that deflected the current into the banks. The upper stream banks were heavily timbered and provided a large source of instream wood. Most of the substrate had a covering of silt, except in the swiftest current. Pool quality was good and stream channel stability was rated as fair (USDA Forest Service 1980).

In September 1991, Palisades Ranger District Fisheries Biologist Gary Dean performed a stream bank inventory between Echo Canyon and Blacktail on Fall Creek. The survey

identified areas where bank instability was less than its full potential. Approximately 45% of the area surveyed had moderate to heavy cattle impacts.

Figure 13: Fall Creek bank erosion, 1986.

Impacts from motorized vehicles and camping were also noted. The lack of stream bank willows and other stabilizing vegetation was documented in several survey areas (Dean 1991). Dean's findings prompted a streambank stabilization project conducted in 1993 by the Palisades Ranger District. The project proposal included green tree revetments to stabilize cut banks, rock and log structures to redirect stream flow, fencing to protect stream banks, willow and sedge plantings, blocking of unauthorized trail and road developments, and beaver management (USDA Forest Service 1993).

Figure 14: FS Road 077 encroachment upon Fall Creek, Spring 1991.

Figure 15: FS Road 077 encroachment upon Fall Creek and riprap, 1991.

Figure 16: Bank stabilization project, 1993.

Figure 17: Ford on Fall Creek near South Fork, 1987.

Pritchard Creek

Pritchard Creek is a high energy, Rosgen type C stream with low sinuosity and an average gradient of 2%. It is fed by many springs and has a substrate dominated by cobble and gravel.

Pritchard Creek has been stocked with hatchery Yellowstone cutthroat trout between 1948 and 1965 (IDFG 2001).

Table 9: Known fish stocking on Pritchard Creek.

Year	Species	Number	Size	Comments
1948	YCT	8,000	2.5”	From Ashton Hatchery
1949	YCT	5,100	1.5-2”	From Ashton Hatchery.
1949	YCT	8,500	1.5-2”	From Ashton Hatchery.
1950	YCT	10,000	1-2”	From Ashton Hatchery.
1951	YCT	9,500	1.5-2”	From Ashton Hatchery.
1952	YCT	7,000	1.5”	From Warm River Hatchery.
1953	YCT	7,200	1.5-2”	From Grace Hatchery.
1954	YCT	16,000	2”	From Ashton Hatchery.
1955	YCT	10,000	1.75”	From Ashton Hatchery.
1956	YCT	9,600	2”	From Ashton Hatchery.
1957	YCT	5,790	2.5”	From Ashton Hatchery.
1962	YCT	6,875	2.5-3”	From Ashton Hatchery.
1963	YCT	10,200	1.5”	From Ashton Hatchery.
1964	YCT	8,320	2”	From Warm River Hatchery.
1965	YCT	7,860	2”	From Warm River Hatchery.

Yellowstone cutthroat trout, primarily from Ashton Hatchery, were used to stock Pritchard Creek. It is uncertain how this stocking has affected the local genetic adaptations of the Pritchard Creek population. It is fortunate brook trout were not stocked in this stream.

Cutthroat trout population densities were estimated in Pritchard Creek approximately 1.75 miles upstream from its mouth in 1979 and 1980. There were an average of 59.2 cutthroat trout per 100 meters of stream in the sample reach in 1979 and 40.9 in 1980 (Moore 1980). In addition to cutthroat trout, Corsi and Elle (1986) documented mountain whitefish and brown trout in Pritchard Creek. They documented juvenile brown trout in the stream, indicating reproduction occurring there.

The Idaho Transportation Department built a cement box culvert below Highway 26 at Pritchard Creek in 1984. It was identified as a barrier to upstream migrating fish. In a letter dated November 4, 1984, Palisades District Norman Huntsman urged the Transportation Department to correct the barrier (Huntsman 1984). In 1985, a fish ladder was constructed at the new Highway 26 crossing of Pritchard Creek, alleviating the problem.

Figure 18: Weirs upstream of the highway, September 2001.

Figure 19: Weirs downstream of the highway, September 2001.

In a river and stream investigation report, Idaho Department of Fish & Game (1980) described Pritchard Creek as a small, second order stream draining an area of 82.9 square kilometers. Pritchard Creek had excellent habitat and a good population of cutthroat trout. The Ostrecamp Irrigation Dam, located just upstream of the Forest Boundary on Pritchard Creek (1 km from mouth of stream), was a barrier to upstream migrating fish. The dam created a 4 acre pond behind it and diverted water to adjacent fields for irrigation. The 50 year old earthen dam blew out in the Spring of 1984, sending a torrent down the stream. The torrent affected stream habitat quality between the old dam site and Highway 26. In July 1986, a fish ladder was installed around the diversion on the

Pancheri Ranch to correct a fish passage problem near BLM land. Partners in this effort included Idaho Department of Fish & Game, Bureau of Land Management, Trout Unlimited, Palisades Ranger District, and private landowners. Upon the completion of the fish ladder, 14 to 17 inch cutthroat trout were observed using it to access Pritchard Creek for spawning. Idaho Department of Fish & Game requested the District not require the Ostrecamps to restore the reservoir basin. Instead, they suggested the stream find its own course through the sediment deposits in the old reservoir bed. They planted the new stream banks with willows to increase stability (Idaho Department of Fish & Game 1986).

Figure 20: Privately owned segment of Pritchard Creek, downstream of BLM land, 1988.

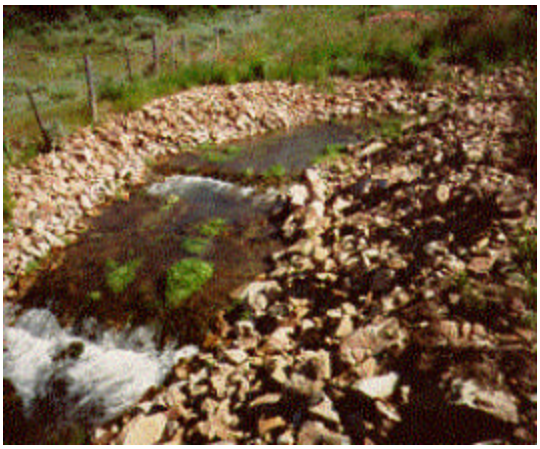

Figure 21: Drop structures placed in Pritchard Creek downstream of old dam site, 1989.

In 1987, Palisades Ranger District, in cooperation with Idaho Department of Fish & Game and Trout Unlimited, proposed to rehabilitate the stream channel upstream of the upper fish ladder. The project proposal included the placement of whole trees along the new stream channel within the old reservoir bed and dispersed planting of willows for stream bank stabilization (USDA Forest Service 1987). In 1987, the project was initiated with the placement of 200 trees along a 1/8 mile length of stream by the Forest, IDFG, TU, and Boy Scouts. In 1988, the project was completed when 200 more trees were placed over another 1/8 mile of stream bank.

Figure 22: Exclosure on Pritchard Creek looking upstream, 8/23/88.

Figure 23: TU volunteers placing tree revetment along bank of Pritchard Creek, August 1987.

During the final phase of project implementation, grazing impacts to the portion of the project on BLM land were noted and expressed by Trout Unlimited and Idaho Department of Fish & Game. Some trampling of stream banks and planted trees were noted. Concerned that cattle grazing would nullify their stream rehabilitation efforts, the local chapter of Trout Unlimited, led at the time by Marv Hoyt, elevated their concerns to the national level of the Forest Service. In August, Forest and District staff reviewed the reported damage and observed 7 of the 200 tree revetments and 50 feet of riprap along the fish ladder were damaged. It was felt the vast majority of the revetment structures continued to stabilize the stream banks. Measures that were taken to improve the situation included improving the riprap, constructing a fence to restrict cattle access to the stream, adding trees to the revetment structures, and converting a diversion ditch to a cattle watering area (USDA Forest Service 1988).

Despite the reaction of the Forest to the reported concerns, the Idaho Sportsmens Coalition used the incident in Pritchard Creek in April 1989 to produce a press release blasting the Targhee National Forest for a lack of a fisheries program and "betrayal" of the Challenge Cost Share Program (Idaho Sportsmens Coalition 1989).

Figure 24: Rip rap trampled by cattle on BLM land reported, 8/5/88.

Figure 25: Rip rap trampled by cattle on BLM land fixed by FS, 8/23/88.

In 1989, a stream surveyor from the Forest visited the reach between the old reservoir and the Forest boundary. The surveyor described the reach as severely entrenched with unstable banks and excessive aquatic vegetation. There was a recommendation to mechanically pull the stream banks back to aid in stream bank recovery. This stream reach was determined to have the Rosgen channel classification of B4.

Garden Creek

Garden Creek is a relatively small, Rosgen type B stream in a U-shaped valley with a high energy runoff regime. It is spring-fed and has good pool development and a substrate dominated by cobble, gravel and fines. In the summer, most of the water of Garden Creek does not reach the South Fork Snake River due to irrigation diversions on private land. The stream has moderate sinuosity with a 2% gradient.

Garden Creek has been occasionally stocked with Yellowstone cutthroat trout, rainbow trout, and brook trout between 1916 and 1951.

Table 10: Known fish stocking of Garden Creek.

Year	Species	Number	Size	Comments
1916	BT	50,000		From Warm River Hatchery
1920	RB	8,000	3-6”	To HT Henderson
1921	BT	15,000	3-6”	To Freeland Evans
1922	RB	40,000	3-6”	To Freeland Evans
1949	YCT	3,400	1.5-2”	From Ashton Hatchery.
1950	YCT	5,000	1-2”	From Ashton Hatchery.
1951	YCT	400	1.5”	From Ashton Hatchery.

With support of the state hatchery system, sportsman groups stocked brook and rainbow trout in Garden Creek twice each. Fortunately, these fish apparently did not establish naturally reproducing populations. Yellowstone cutthroat trout from the Ashton Hatchery were stocked in Garden Creek 3 times in the past. This was likely not enough to influence the local genetic adaptations of the existing population of Yellowstone cutthroat trout.

Garden Creek experienced a small (78 acre) fire in late summer 1966 (Anderson 1998). Impacts of that fire upon riparian and aquatic resources were not documented.

June 1999, the Caribou-Targhee National Forest Fisheries Crew performed a fish distribution survey on Garden Creek. They found a significant population of Yellowstone cutthroat trout. Approximately 4 miles of this stream flows through Forest land. The lower reach is privately owned. The stream is relatively high gradient and classified as a Rosgen B3/B4 channel type. It is recharged by snowmelt and headwater springs. On the Forest, the stream flows through a U-shaped valley with a moderately wide floodplain (USDA Forest Service 1999).

On private land, it appeared Garden Creek was affected by a complex of diversions and culverts, making upstream fish passage difficult, but not impossible. This is evidenced by observation of some fluvial fish in the 1999 survey. Small check dams and headgates and stream channel dewatering don’t exclude all upstream migrating fluvial Yellowstone cutthroat trout from accessing Garden Creek on Forest Lands, but likely cause a significant degree of mortality for young out-migrants since no fish screens are present. The main channel of the stream is diverted at least twice below the Forest boundary, affecting flows throughout the late summer (USDA Forest Service 1999).

Based on observations on the Conant Valley Ranch in September 2001, the likely route the fluvial fish take to enter Garden Creek is up Granite Creek and up a diversion channel that connects to Granite Creek that, during the spring, carries most of Garden Creek’s flow. The diversion channel was excavated many years ago through old river sediment deposits and has significantly downcut through the years to a point it is no longer accessible for irrigation purposes. The ranch has recently excavated a parallel ditch that diverts water from the diversion so they can use it to irrigate their pasture. The operation of their headgates have apparently not affected upstream migrating Yellowstone cutthroat trout.

Figure 26: Pond on private land, September 2001.

Figure 27: Outlet to private pond in lower Garden Creek was impassable to upstream-migrating fish.

Figure 28: The original channel of lower Garden Creek occurs near the willows located in the center of photograph. Most springtime flow reaching the river flows through an historic irrigation ditch excavated along the toe of the slope in the background of this photo.

Figure 29: Diversion of Garden Creek, 9/01. This ditchline extends from Garden Creek to Granite Creek and may be the route taken by fluvial fish to access Garden Creek. Note Granite Creek Highway 26 grade in upper right corner.

Figure 30: Diversion structure upstream of lower diversion, 9/01.

Figure 31: Upper most diversion structure, 9/01.

The northwest facing slopes were relatively open and vegetated by quaking aspen, shrub, and grass. Southwest uplands were vegetated by a fir and mixed shrubs complex. In several sample units beginning approximately a mile upstream of the Forest boundary, there was a high frequency of large wood on the forest floor that often extended into the riparian area and stream channel. In some units, large instream wood jams were so thick

the sampling crew had to adjust their unit lengths to account for the inability to electrofish some of these areas.

Water temperatures ranged from 6 to 10.5 C in June. Sinuosity was >1.2 and the width to depth ratios were well within the index of >12. Stream gradient was 1.5 to 2.3%. Stream banks were often vertical, with some undercutting. Cobble, gravel, and fines dominated substrate composition. Observations of past cattle impacts were noted during the survey, but were low in frequency.

In 1999, Garden Creek supported high densities of Yellowstone cutthroat trout. They apparently exhibit both resident and fluvial life history patterns. Both fine-spotted and large-spotted varieties of Yellowstone cutthroat trout were observed in the stream. All age classes were collected (USDA Forest Service 1999).

WILDLIFE

Wildlife in the Early Days

The history of wildlife interacting with the first caucasian people in and around these watersheds goes back to some of the earliest history in the Western U.S. On September 22, 1812 the party of Robert Stuart camped on a low hill believed to be where the Snake River Guard Station pasture is now, and the next day rafted down through Conant Valley to the Henry's Fork. This trip is the first route of white men to be described in written detail and were the first white men known to trap beaver on the streams of the Caribou National Forest (Webster 1972-74). That was the main purpose of why they were here at that time. Trappers were the entrepreneurs of the day.

Trapping of beaver and other furbearers and killing of bison and big horn sheep was the focus of the early trappers. There are records of beaver and bison in the Fall Creek area (Russell; Editor Haines, 1965). It is likely that beaver trapping in Fall Creek (called Muddy Creek) was fairly good in these early days (1812-1820's). The first extensive trapping record (NW Fur Co.) was by McKenzie from 1818 – 1821. This party trapped the upper Snake River drainage, and rich fur from the Caribou was highly prized. By 1845 many fur companies and trappers had covered the area fishing, hunting, trading furs with the Indians (who by now had probably begun trapping more to trade) and competing for the wildlife resources. By this time beaver, mink, bison and other furbearers were being depleted. In 1835 Bonneville remarked that the country was no longer fit for white men because the beaver and buffalo were gone (Webster 1972-74).

However, the trappers kept coming. Osborne Russell (in area from 1834 –1845) was originally one of Wyeth's employees and later was an independent trapper and he spent some time going through "Muddy Creek" looking for beaver and bulls (bison). His poem "The Hunter's Farewell" (1845) appears to inform us of the wildlife he encountered such as: "timid lambs, harmless ewes (big horn sheep), feathered monarchs soard (eagles), antlered herd are dwindling fast (elk and deer), trails so deep by bison worn now teem with weeds or overgrown grass, guant wolves… where herds… have fed" and one of the final verses "once famed hunting grounds" tell some of the story (Webster 1972-74).

It is likely that bison roamed into even the side canyons of Fall, Prichard and Garden Creeks. Haderlie (2001) reported finding a bison skull two miles up Deadman Canyon in Bear Creek which is the next major drainage south of Fall Creek. He took the skull to Idaho State University for carbon dating. From 1818 – 1845 the bison were slaughtered (Webster 1972-74). Big horn sheep were plentiful up to 1840. Russell reported lots of wintering big horn which he hunted along the South Fork of Snake in about February 1839 below where Garden Creek enters the river.

One story in the spring of 1861 is of traders who collected 460 beaver, 210 mink and 300 buckskins from trappers and Indians from Ft. Hall, up the South Fork of the Snake, Salt River, Tin Cup, Blackfoot River to Soda Springs. It appears this was all the catch for that winter which probably seems low for the time. Bison had disappeared from the country

by 1860. Russell had killed a bull about May 30, 1840 at the mouth of Fall Creek and went up the right fork of Fall Creek (most probably above South Fall confluence) and trapped for beaver for 6 days before leaving. This is same stretch Hill (2001) says he traps beaver today, which is near the 1966 Currant Creek burn upwards to Rash Canyon and above.

Goodhart (1842-1927; Trails of Idaho) reported killing deer in the South Fork of Snake River and seeing a thousand elk calves from Camas Prairie to Arco. This gives the impression that elk may have out numbered the deer in the later 1800's. It appears that deer, elk, antelope, bison, big horn sheep became low in the 1870's and bison, sheep and antelope were eliminated by the early 1900's (Webster 1972-74). Russell didn't mention a lot of deer in the area around this watershed like he did for the country north of Yellowstone National Park.

Wolves coyotes, lynx, bobcats, bears (brown and black), wolverine and mountain lion were reported present in considerable numbers on the Caribou Forest until after 1900. The last grizzly was seen on the Forest in the 1920's, wolverine were unreported after 1925 and wolves gone since about 1930's. The Fall Creek Basin Cattle Association withdrew their $50 bounty on wolves in 1938 and an old report showed they paid $400 in 1921 for 8 wolf pup scalps (Webster 1972-74). It is likely that these hunters would kill or trap other species like the wolverine or lynx as well.

Lee Twitchell the Idaho agent for the Fish and Wildlife Service in 1945 said he trapped the last wolves in Caribou and Fall Creek Basins in 1929. Coyotes, mink, a very few marten, some red and cross fox, some bobcats and a few mountain lion are on the Caribou, and there are more than a few Canadian lynx on the north end of the forest (this would be from Garden Creek and Antelope Creek southward). Bear are present and otter are reported along the river and its tributaries, but the once crafty fisher is supposed to be entirely absent in about 1945. The impression is that the above reports are from the Forest wildlife report in about 1945 (Webster 1972-74).

Blacktail Canyon in Fall Creek was named by John F. Jones because of the presence of mule deer. Jones was first to graze cattle in Fall Creek. This canyon is a popular deer area today. Bates Canyon just upstream in Fall Creek from Blacktail Canyon was named for Dan Bates a trapper hired by the cattlemen to trap wolves in 1898. Fatty Haskin grazed sheep in Fall Creek when the Forest was created in 1907 and Haskin Creek in upper Fall basin is named after him. And, Gibson Creek is named after one of the first cattlemen in Fall Creek in about 1885. He fenced the area of the Fall Creek Ranger Station pasture for his headquarters prior to 1945 (Webster 1972-74). This south facing slope area from Blacktail to Bates is today an important elk wintering area, probably the same as it was over 100 years ago, and wolves at that time appeared to be common there as well.

Figure 32. Area of Blacktail Canyon in 2001. It is believed that the many juniper there now were probably not there in the 1890's.

Figure 33: South facing slope of Fall Creek showing deer and elk winter range in 2001. Historically, what is now sagebrush covered hills were most probably more native grasses than brush prior to 1900 which provide good forage for elk.

Thirteen days before the Stuart party camped between the Fall - Pritchard watersheds (see figure 42) they camped in the Bear River country to the south and reported that the valleys had recently been burned by grass fire and had seen lots of bison sign, but saw no animals. This was September 9, 1812. In late September 1834 at Ft. Hall, Russell wrote that "the country was very smoky and the weather sultry and hot ". Pioneer settlers reported seeing forest fires in the 1870's up until 1888 and that they burned uncontrolled all summer long in the Caribou Forest. It is likely that fire was also a common occurrence in the Fall Creek watershed and the junipers had not increased in the sagebrush/ bitterbrush habitats like they are today.

Today it is known throughout the intermountain west that quaking aspen clones have been taken over by conifers. It is most likely that aspen dominated much of the forest type where it occurs ecologically back in the 1800's. Based on the information available summer fires would have keep encroaching conifer (which is sensitive to fire) cleaned out of the stands. Aspen clones would then resprout sanitized of diseases and insects that often plaque old clones today.

Many thousands of cattle and horses started coming into the Caribou NF area as early as 1836 on the Oregon Trail and by 1875 there were large numbers of cattle herded by large range cattle outfits on the Caribou NF. The first sheep came in about 1883 (Webster 1972-74).

Other ranchers around the Caribou-Targhee NF which were interviewed in 1945 with Ricks told similar stories about the range and game. H.H. Thompson came in 1898 and he said there was no June grass then (probably Cheatgrass), but by 1945 the principle forage was June grass. He also said that there were less elk and more deer now (1945) than earlier (Webster 1972-74). John Jones (who named Blacktail Canyon) was the first settler in Fall Creek in 1884 with his wife Elizabeth and four children. He grazed a 100 head of cattle in the drainage (Webster 1972-74).

By 1900 livestock had damaged the grasses and forbs on the range, then came the fire control with the establishment of the Forest Service. The sagebrush and other woody plants were favored, thus mule deer increased and elk which prefer grass, decreased. By 1945 active projects had begun on the Caribou NF to remove the sagebrush. The goal was to treat at least 3000 acres a year until all areas which will be benefited by sage removal had been done (Webster 1972-74). Refer the Range section for more details on sage removal in Fall Creek. The active burning and railing of sage has benefited elk particularly. Refer the Wildlife current condition section.

Wildlife in the Recent History

In August 2001 a group of folks were interviewed concerning the wildlife history of Fall Creek in the past 40 years. Rollo Brunson was District Ranger in 1966 when the Currant Creek fire occurred. Vaugh Haderlie has been a big game outfitter in the drainage all his life and is now retired. Lois Anderson was on the Idaho Falls and Palisades Ranger Districts her whole FS career. Rod Payne and Kim Ferguson have been ranchers and permittees on the Fall Creek allotments all of their lives. Jerry Reese (current Forest Supervisor of Caribou-Targhee NF) and Alex Martin a former FS employee also helped. Jerry grew up traveling and hunting the watershed in the 1960's when his dad was the District Ranger there.

Anderson discussed that Lee Presley had a brush spraying project in Fall Creek to improve grass forage in 1961-62.

Brunson (2001) indicated that Fall Creek burned quite a bit while he was in charge as did Pritchard and Garden Creeks. Refer to the Fire section. He also seeded many of the burns. He also helped to reduce the agricultural trespass and special use permits on the NF which was creating problems in the watershed near the mouth of Fall Creek. A wildlife fence exclosure was built on the south facing slope of Fall Creek to help resolve questions between impacts of elk and deer. He doesn't remember all the off road vehicle damage that is occurring now, and he didn't remember a road up Rash Canyon at the time. Reese and Brunson do remember a road up the South Fork of Fall Creek. Brunson

never remembers any public access up Pritchard Creek unless the private land owner gave permission.

Brunson recalls that sage grouse were present in the Skyline area in upper Fall Creek as were sandhill cranes. Haderlie recalls abundant blue and ruffed grouse populations in '60s and '70s. When Brunson flew game counts with the Idaho Fish and Game he recalls elk wintering on the ridges such as those directly south of Fall Creek between upper Fall, Rash, South Fall, Currant Creeks and Horse Creek. He recalls that snowmobiles were just coming on in the '60s.

Haderlie, Reese and Payne remembered the die offs of deer in the 1960's. Reese and Payne recall the severe winters of '60 – '63. Payne only recalls 600 elk wintering in this area in the 1960's (including Tex Creek and surrounding winter range also). He also said that their cattle numbers have gone down about 100 head since then. Payne and Haderlie remember the slaughter of deer in Fall creek during the late season hunts of 1973-74. Haderlie remembers great deer hunting when he got his outfitters license in 1969. He recalls snowmobiles coming out of the Fall Creek canyon with a deer strapped to each one in the '73-74 late hunts. He said one year 7600 deer were harvested and the next year's harvest was only 92 animals.

Haderlie is most disturbed by the increase of ATV and motorcycle use since the 1960s and the damage done. He also believes the snowmobiles are driving the deer out of the canyon today. There are a lot of illegal routes off of FS Road 376. Long time observers of the Fall Creek landscape have noted a recent increase in land impacts from off-road/trail motorized use. Martin and Payne don't remember all the noxious weeds competing with game forage and native plants like is seen today. They believe the occurrence began with motorized vehicles started spreading them all over the watersheds.

Payne and Haderlie recall the good beaver dams and fishing in upper Fall Creek in 1960s and '70s. Payne recalls going up to the 3 Forks in upper Fall Creek with FS Range Conservationist (Dick Ward) in early spring (probably 1984) and seeing lots of beaver dams frozen up in the creek. A few days later the ice broke loose and knocked out all the dams. He said the fishery has never done very well after that. He said the drainage lacks beaver now compared to what it use to be. He also pointed out the section of stream (like Trail Creek) were beaver have cut the aspen back and it is resprouting now. Payne, Ferguson and Hincks all recall the upper Fall Creek drying up in the late summer of 1992. This year (2001) is similar. The stream is dry above the road in upper Fall again with beaver dams across the a dry channel. Brunson (2001) recalls in his written report on Fall Creek that he thought the livestock grazing in upper Fall was managed well in the '60s and that the main problem with erosion was the stream banks at high volume. He thought the Currant Creek burn was a short term problem that eventually stabilized.

Mule deer populations were at a historical high in this analysis area when surveyed in February l991. The winter of l992-93 was severe and significant mortality occurred, especially to fawns. The population rebounded rapidly to long term average levels, but has not approached the extreme highs of the late l980s and early l990s (IDFG 2001).

Other Past Uses

Other than the impact of early trapping, hunting and grazing other uses on wildlife have been rather minor except the advent of the motorized vehicle. It is a pretty good guess from discussing this issue with those that knew the watersheds best in the past that the current heavy use of off road vehicles was not present prior to the 1960's. It is likely that the few 2 track roads that developed were after about 1945 when jeeps became popular after WWII. Aerial photos in the early 1950s show that some of the routes were not there even then. Alford (2001) recalls that when he came to the Palisades District in 1985 that there were a few hillclimbs in Fall Creek and that most of the trails were only being used by a few motorcycles during the summer. Beginning in the early 1990s 4x4 ATV damage started to show up. The increase of new cross country routes has been increasing in force the past 6-7 years. Effects on big game, threatened, endangered and sensitive wildlife were probably minor prior to 1965. Snowmobiles in this critical winter range first started to be a problem here and other game winter ranges in the west in the late 1960s. The utility corridor roading is a rather recent impact since advent of electricity at mid century.

Mining and logging were not a major use here in the past from all indicators and have not played much of a role in shaping wildlife habitat.

RECREATION

Dispersed Camping

Dispersed camping in the past centered on the Fall Creek road. The same sites used today were used in the past only not as many. Dispersed camping was centered on fishing and hunting season more than it is today. Summer dispersed camping was much less and not as evident as it is today and it was not long term camping. Motorized use was small and many use horse. Hunting season was the time that greatest use occurred. During the 70 and 80 the big game hunting was very popular, because it was one of a few spots where an open Bull elk hunt was allowed. During that time (5 to 7 days) every campsite would be full along Fall Creek and along many other access roads in the watershed. When the hunting regulations (mid 90s) were changed so that a person could not hunt in more than one unit. The uses drop off significantly during the hunting season.

Motorized Travel

Motorized use has been in the area for many years, but the extent of use did not exist 10 years ago. Technology and population increases did not exist at that time. Motorized travel was limited to better-maintained trails and areas where access was unrestricted. Even though restrictions were not in place, motorized use was not that popular and the problems related to motorized use did not occur. Snowmachines were used but they were not all that dependable and much heavier. They simply could not go places that caused the resource concern of today. This started to change in the early to mid 90s when the machine got more reliable and affordable. ATV had much of the same effect. Use was light in the past and not many people owned them. Spring antler hunting was not as profitable and gathering was more for personal satisfaction.

Developed Facilities

The only semi-developed site in the analysis area is the loop trail that leads to the overlook of the falls at the mouth of Falls Creek. It consists of a turnout parallel to the River Road and a dirt trail. It was planned to construct a campground at the mouth of Fall Creek. This plan has been drop.

Outfitting

No summer outfitting was permitted in this area. Some hunting outfitting was done in the upper part of commissary ridge area but none in the reaming part of the analysis area. No adjacent private land had been developed for outfitting guests.

TRANSPORTATION

The early history of the transportation system in the Fall Creek Analysis Area shows that the Fall Creek Road #077 did not exist in 1914, as we know it today. The road the only went part way up the canyon to South Fork of Fall Creek, then it was a trail the rest of the way and also a trail up the South Fork of Fall Creek. The road came down the canyon to Blacktail Canyon with the road then going up Blacktail to Point Lookout and then down Pritchard Creek Canyon. From Blacktail down to the trailhead at South Fork of Fall Creek it was a trail. The road from Blacktail on up Fall Creek went to the old Fall Creek Range Station near the intersection of Gibson Creek and the present Fall Creek Road. The road then made it's way in a Westerly direction eventually tying in to dry land farming roads and county road system. Sometime between 1914 and 1926 the Fall Creek Road was constructed connecting the portion between South Fork of Fall Creek and Blacktail Canyon, thus completing a route through Fall Creek Canyon. (Caribou National Forest, Idaho and Wyoming, USGS,GLO Maps, 1914 and 1926.)

Pritchard Creek road was a main route accessing the upper area of Fall Creek by way of, Pritchard Canyon to Lookout and down Blacktail Canyon or down Gibson Creek on to the Fall Creek Ranger Station. (1920 USGS, GLO map) When the road was constructed up Fall Creek, the road up Pritchard appears to have been abandoned, not sure when this was. Also I was informed that some coal mining exploration had accrued in the Pritchard Creek drainage in early years. Near the mouth of Pritchard Creek where it enters Snake River, there was a ferry that crossed the Snake River and was operated by a fellow by the name of Joe Jones, of Swan Valley. When the bridge crossing the Snake River was constructed the ferry was eliminated. (Jay Weeks, Swan Valley Id.)

The Garden Creek Road accessed the Ballys Hole area in to the Nelson Creek drainage, also Granite Creek and down Trail Canyon to Antelope Creek, each of these drainages had roads in them. Near the head of Garden Creek was Howell's Corral, which was reached by Nelson Creek Road and then later up Garden Creek Road. Garden Creek Road, Granite Creek Road and Pritchard Creek Road were all closed to public access in the 1970's by private ownership.

There were two roads that paralleled the Snake River through Swan Valley, and were not connected until a bridge was built sometime around 1915, until then access from on side of the river was by ferry. The road on the South side of the river accessed several homesteads along the river. It started off from what is now called road #060, Bagley Road and traversed across the canyons, Fall Creek, Papoose Creek, Squaw Creek and then dropping back down to the Snake River near Indian Creek. It wasn't until the late 1920's that the road was constructed along the river where it is presently located today. I am sure that there was work being done yearly on this road.

Small roads or as referred to on the old USGS maps as jeep trail existed up South Fork of Fall Creek, Rash Canyon and Fall Creek Basin in the 1950's.

The 1921 USGS map showed the June Creek Road basically following the same path in which it follows today, road #376. This road crossed a number of small streams and then ties in to the Skyline Ridge Road.

Most of the trails in this watershed are open to motorized use, some ATV accessible but mostly motorcycle. This is a new concept to an area where foot or horse was the only mode of travel. However the area is open only to designated routs.